Human Factors

research and technology division

Aviation System Monitoring and Modeling (ASMM)

Objective

ASMM is a Project of the Aviation Safety Program to provide:

- decision makers with regular, accurate, and insightful measures of the performance, and safety of the National Aviation System (NAS),

- technology and procedure developers with reliable predictions of the system-wide effects of the changes they are introducing into the NAS.

Approach

The four-fold approach of the ASMM Project is to:

- Develop methodologies and tools to routinely process large masses of anecdotal and quantitative data, extract and display reliable information with which experts can gain insight into the performance and safety of the NAS and can identify situations that may indicate changes to levels of safety,

- Assist and encourage stakeholders in the NAS in the use of these tools for their operational evaluation and continuous evolutionary development, and

- Develop fast-time simulations that enable reliable predictions of system-wide effects of proposed technological or procedural changes.

ASMM Products described below (APMS, PDARS, NAOMS, and Fast-time Simulation) provide independent, stand-alone capabilities, but their true value is in merging the information extracted by these tools from diverse databases to achieve the ASMM objective of a system-wide perspective. The ASMM approach emphasizes identification of user needs up front and entails extensive and continuous interactions with stakeholder organizations to ensure that capabilities under development are responsive to needs of the aviation community.

Impact

ASMM will enable definition of operational and safety trends and identification of developing conditions that could compromise NAS safety. It will also allow an industry-wide proactive approach to identification and alleviation of life-threatening aviation conditions and events. ASMM provides the methodologies, the computational tools, and the infrastructure to assist the experts in making the best possible decisions.

Information Technology

ASMM incorporates innovative technology for efficient processing of large volumes of complex, heterogeneous data, and state-of-the-art tools for extracting, merging, presenting and visualizing the information from a system-wide perspective.

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URL: http://humanfactors.arc.nasa.gov/ihs/